# BRUHATH BANGALORE MAHANAGRA PALIKE

| | | |
|---|---|---|
| Name of the Agency | : | **Mr. R. Nagaraj,**<br>#4/13, Avalamma Choultry Layout, Magadi Road, Bangalore - 23. |
| Name of the Work | : | Improvements to cross roads at Munikondappa Layout link road Shivappa Garden to Dodda Maranna Layout in Bagalagunte Ward No.14, BBMP, Bangalore. |
| Estimate Cost | : | Rs. |

## QUALITY CONTROL REPORTS TO

**Asst. Executive Engineer,**
**T. Dasarahalli Sub Division,**
**BBMP, Bangalore.**


## CIVIL-TECH CONSULTANTS & ENGINEERS

**Building & Highway Material Testing Laboratory**
**NABL ACCREDITED LABORATOTY AS PER ISO / IEC – 17025:2005**
**No.23/14, 7th Cross, 3rd Stage, 4th Block, Shakthi Ganapathi Nagara,**
**Basaveshwaranagar, Bangalore – 560 079.**

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Building & Highway Material Testing Laboratory

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**NABL** - Accredited Laboratory as per ISO / IEC-17025 : 2005


Job No.: CTCE/BBMP/W.No.14/RN/GSB-I/GR/2016-17

Date : 03.08.2016

## GRADATION FOR GSB(Coarse Graded-1)
## IS : 2720 (Part - 4)

**Customer** : **Asst. Executive Engineer,** T. Dasarahalli Sub Division, BBMP, Bangalore.

**Agency** : **Mr. R. Nagaraj,**
#4/13, Avalamma Choultry Layout, Magadi Road, Bangalore - 23.

**Name of work** : Improvements to cross roads at Munikondappa Layout link road Shivappa Garden to Dodda Maranna Layout in Bagalagunte Ward No.14, BBMP, Bangalore.

**Reference** : BBMP/DZ/AEE/TDSD/PR/ /2016-17 Dated:05.08.2016

**Date of Testing** : 03.08.2016

**Sample Source** : Mix Plant Bangalore. **Oven Dry Wt (gm) :** 6380

TABLE – 1

| Is Sieve Size in mm | Weight Retained (gm) | Cumulative Weight Retained (gm) | Cumulative % of Retained | Cumulative % of Passing | Specified Limits |
|---|---|---|---|---|---|
| 75 | - | - | - | 100 | 100 |
| 26.5 | 1980 | 1980 | 31.03 | 68.97 | 55-75 |
| 4.75 | 2565 | 4545 | 71.24 | 28.76 | 10-30 |
| 0.075 | 1385 | 5930 | 92.95 | 7.05 | <10 |
| PAN | 450 | | | | |
| Total | 6380 | | | | |

**Remarks:** Satisfies MORTH Specifications as per Table 400-2, Grading I

Note:

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BSCIC ISO 9001 REGISTER

Job No.: CTCE/BBMP/W.No.14/RN/GSB-I/AL/2016-17

Date : 03.08.2016

## ATTERBERG LIMITS TEST FOR GSB
## MORTH TABLE-400-01

**Customer** : **Asst. Executive Engineer,** T. Dasarahalli Sub Division, BBMP, Bangalore.

**Agency** : **Mr. R. Nagaraj,**
#4/13, Avalamma Choultry Layout, Magadi Road, Bangalore - 23.

**Name of Work** : Improvements to cross roads at Munikondappa Layout link road Shivappa Garden to Dodda Maranna Layout in Bagalagunte Ward No.14, BBMP, Bangalore.

**Reference** : BBMP/DZ/AEE/TDSD/PR/ /2016-17 Dated:05.08.2016

**Date of Testing** : 03.08.2016

**Sample Source** : GSB, Mix Plant

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| Sl. No. | Particulars | Test Results | Standards as per Specifications |
|---|---|---|---|
| 1 | Liquid Limit, % | 22.50 | 25.0% Maximum. |
| 2 | Plasticity Index, % | Non Plastic | 6.0% Maximum. |

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Job No.: CTCE/BBMP/W.No.14/RN/WMM/Gradation/2016-17 : 05.08

## GRADATION FOR WMM
## MORTH TABLE-400-11

**Customer** : **Asst. Executive Engineer,** T. Dasarahalli Sub Division, BBMP, Bangalore.

**Agency** : **Mr. R. Nagaraj,**
#4/13, Avalamma Choultry Layout, Magadi Road, Bangalore - 23.

**Name of Work** : Improvements to cross roads at Munikondappa Layout link road Shivappa Garde Dodda Maranna Layout in Bagalagunte Ward No.14, BBMP, Bangalore.

**Reference** : BBMP/DZ/AEE/TDSD/PR/ /2016-17 Dated:05.08.2016

Date of Testing : 05.08.2016

Material : WMM

Sample Location : WMM Mix Plant

Oven Dry Wt (gm): **7820**

| Is Sieve Size in mm | Weight Retained (gm) | Cumulative Weight Retained (gm) | Cumulative % of Retained | Cumulative % of Passing | Spec.Limi |
|---|---|---|---|---|---|
| 53 | 0 | 0 | 0 | 100 | 100 |
| 45 | 250 | 250 | 3.2 | 96.8 | 95-100 |
| 22.4 | 2450 | 2700 | 34.5 | 65.5 | 60-80 |
| 11.2 | 1095 | 3795 | 48.5 | 51.5 | 40-60 |
| 4.75 | 1005 | 4800 | 61.4 | 38.6 | 25-40 |
| 2.36 | 990 | 5790 | 74.0 | 26.0 | 15-30 |
| 0.600 | 785 | 6575 | 84.1 | 15.9 | 8-22 |
| 0.075 | 860 | 7435 | 95.1 | 4.9 | 0-8 |

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Job No.: CTCE/BBMP/W.No.14/RN/WMM/AIV/2016-17

05.08.2016

## Aggregate Impact Value

IS: 2386 Part IV

| | |
|---|---|
| **Customer** | **Asst. Executive Engineer,** T. Dasarahalli Sub Division, BBMP, Bangalore. |
| **Agency** | **Mr. R. Nagaraj,** #4/13, Avalamma Choultry Layout, Magadi Road, Bangalore - 23. |
| **Name of the Work** | Improvements to cross roads at Munikondappa Layout link road Shivappa Garden to Dodda Maranna Layout in Bagalagunte Ward No.14, BBMP, |
| **Reference** | BBMP/DZ/AEE/TDSD/PR/ /2016-17 Dated:05.08.2016 |
| **Source / Location** | WMM Plant |
| **Type of Mix** | Wet Mix macadam |
| **Date of Testing** | 05.08.2016 |

| Sl No. | Details | Trial No. 1 | Trial No. 2 | Average |
|---|---|---|---|---|
| 1 | Total weight of aggregate sample filling the cylindrical measure = $W_1$ g | 379 | 382 | |
| 2 | Weight of agregate passing 2.36 mm sieve after the test = $W_2$ g | 78 | 79 | |
| 3 | Weight of aggregate retained 2.36 mm sieve after the test = $W_3$ g | 301 | 303 | |
| 4 | Aggregate Impact value = percent fines | 20.58 | 20.68 | |
| | 100* ($W_2/W_1$)% | | | **21.00** |

Comments:

→ Maximum allowable Aggregate Impact value for Wet mix Macadam is 30%

**Note:**

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Job No.: CTCE/BBMP/W.No.14/RN/WMM/S-T/2016-17 05.08.2016

## DETERMINATION OF FLAKINESS INDEX & ELONGATION INDEX OF COARSE AGGREGATES

| | |
|---|---|
| Customer | **Asst. Executive Engineer,** T. Dasarahalli Sub Division, BBMP, Bangalore. |
| Agency | **Mr. R. Nagaraj,** #4/13, Avalamma Choultry Layout, Magadi Road, Bangalore - 23. |
| Name of Work | Improvements to cross roads at Munikondappa Layout link road Shivappa Garden to Dodda Maranna Layout in Bagalagunte Ward No.14, BBMP, Bangalore. |
| Reference | BBMP/DZ/AEE/TDSD/PR/ /2016-17 Dated:05.08.2016 |
| Technical Reference | IS 2386(Part 1) 1963 (RA 2011) |
| Type of Mix | Wet Mix Macadam |
| Date of Testing | 05.08.2016 |

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Result : Flakiness Index = **11.98%**

Elongation Index = **13.58%**

**Result : Combined Flakiness & Elongation index** **25.56%**

**Comments:**

Maximum allowable Flakiness & Elongation Index for Wet Mix Macadam is 30%

**Note:**

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**Basaveshwaranagar,**
**Bangalore-560079.**


#23/14, 7th Cross, 3rd Stage, 4th Block, Shakthi Ganapathi Nagara, Basaveshwaranagar, Bangalore-79.
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# CIVIL-TECH CONSULTANTS AND ENGINEERS

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T-237


Job No.: CTCE/BBMP/W.No.14/RN/CSR-08/118a/QB(BC)/2016-17 16.08.2016

## TEST REPORT ON DETERMINATION OF BITUMEN CHARACTERISTICS

| | | |
|---|---|---|
| *CUSTOMER | : | **Asst. Executive Engineer,** T. Dasarahalli Sub Division, BBMP, Bangalore. |
| *AGENCY | : | **Mr. R. Nagaraj,** #4/13, Avalamma Choultry Layout, Magadi Road, Bangalore - 23. |
| *NAME OF THE WORK | : | Improvements to cross roads at Munikondappa Layout link road Shivappa Garden to Dodda Maranna Layout in Bagalagunte Ward No.14, BBMP, Bangalore. |
| REFERENCE | : | BBMP/DZ/AEE/TDSD/PR/ /2016-17 Dated:05.08.2016 |
| *SAMPLE ID | : | Bitumen |
| DATE OF SAMPLING | : | 13.08.2016 |
| DATE OF TESTING | : | 16.08.2016 |

The results of the tests conducted on the bitumen sample.

| Sl. No | Description | Test Method as per IS | Test Result | Requirement as per IS:73:2013 |
|---|---|---|---|---|
| 1 | Penetration at 25 $^0$C, 1/10 mm | IS :1203 -1978 (RA-2009) | 68 | 60 to 70 |
| 2 | Softening point, $^0$C | IS :1205 -1978 (RA-2009) | 46 | Min. 45 |
| 3 | Ductility at 27$^0$C, cm | IS :1208 -1978 (RA-2009) | 100 > | Min. 50 |
| 4 | Flash Point, $^0$C | IS :1209 -1978 (RA-2009) | 302 | Min. 220 |

*Information is furnished by the Customer/Representative.

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**********

**VISHWANATH. I.A.**
**Chief Executive Officer**

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Job No.: CTCE/BBMP/W.No.14/RN/BC/AIV/2016-17

16.08.2016

## Aggregate Impact Value

IS: 2386 Part IV

| | |
|---|---|
| **Customer** | **Asst. Executive Engineer,** T. Dasarahalli Sub Division, BBMP, Bangalore. |
| **Agency** | **Mr. R. Nagaraj,** #4/13, Avalamma Choultry Layout, Magadi Road, Bangalore - 23. |
| **Name of the Work** | Improvements to cross roads at Munikondappa Layout link road Shivappa Garden to Dodda Maranna Layout in Bagalagunte Ward No.14, BBMP, Bangalore. |
| **Reference** | BBMP/DZ/AEE/TDSD/PR/ /2016-17 Dated:05.08.2016 |
| **Source / Location** | Hot Mix Plant, Bangalore |
| **Type of Mix** | Bituminous Concrete |
| **Date of Testing** | 16.08.2016 |

| Sl No. | Details | Trial No. | | Average |
|---|---|---|---|---|
| | | 1 | 2 | |
| 1 | Total weight of aggregate sample filling the cylindrical measure = $W_1$ g | 386 | 388 | |
| 2 | Weight of agregate passing 2.36 mm sieve after the test = $W_2$ g | 85 | 86 | |
| 3 | Weight of aggregate retained 2.36 mm sieve after the test = $W_3$ g | 301 | 302 | |
| 4 | Aggregate Impact value = percent fines<br>100* ($W_2/W_1$) percent | 22.02 | 22.16 | 22.09 |

Comments:

→ Maximum allowable Aggregate Impact value for Bituminous Concrete is 24%

**Note:**

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Job No.: CTCE/BBMP/W.No.14/RN/BC/Shape.T/2016-17 : 16.08.20

## DETERMINATION OF FLAKINESS INDEX & ELONGATION INDEX OF COARSE AGGREGATES

| | |
|---|---|
| Customer | : **Asst. Executive Engineer,** T. Dasarahalli Sub Division, BBMP, Bangalore. |
| Agency | : **Mr. R. Nagaraj,** #4/13, Avalamma Choultry Layout, Magadi Road, Bangalore - 23. |
| Name of Work | : Improvements to cross roads at Munikondappa Layout link road Shivappa Garde Dodda Maranna Layout in Bagalagunte Ward No.14, BBMP, Bangalore. |
| Reference | : BBMP/DZ/AEE/TDSD/PR/ /2016-17 Dated:05.08.2016 |
| Technical Reference | : IS 2386(Part 1) 1963 (RA 2007) |
| Type of Mix | : Bituminous Concrete |
| Date of Testing | : 16.08.2016 |

Result : Flakiness Index = **12.35%**

Elongation Index = **13.20%**

Result : Combined Flakiness & Elongation index **25.55%**

Comments:

→ Maximum allowable Flakiness & Elongation Index for Bituminous Concrete is 30%

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18.08.20

Job No.: CTCE/BBMP/W.No.14/RN/BC/Stripping/2016-17

## Stripping Value of Road Aggregates (Static Immersion Test)

IS: 6241

| | |
|---|---|
| **Customer** | **Asst. Executive Engineer,** T. Dasarahalli Sub Division, BBMP, Bangalore. |
| **Agency** | **Mr. R. Nagaraj,** #4/13, Avalamma Choultry Layout, Magadi Road, Bangalore - 23. |
| **Name of the Work** | Improvements to cross roads at Munikondappa Layout link road Shivappa Gard to Dodda Maranna Layout in Bagalagunte Ward No.14, BBMP, Bangalore. |
| **Reference** | BBMP/DZ/AEE/TDSD/PR/ /2016-17 Dated:05.08.2016 |
| **Type of Mix** | Bituminous Concrete |
| **Date of Testing** | 18.08.2016 |

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Type of binder : 60/70

Percentage of binder used : 5.00% by wt.

Total weight of aggregate : 200 g

Total weight of binder : 10.00 g

Temperature of water-bath : 40° C

| Observation Number | Stripping, Percentage | Average, Percentage | Average Retained Coating, % |
|---|---|---|---|
| 1 | 3.1 | 3.20 | 96.80 |
| 2 | 3.2 | | |
| 3 | 3.3 | | |

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Comments:

→ Minimum allowable Aggregate retained coating for Bituminous Concrete is 95%

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**NABL** - Accredited Laboratory as per ISO / IEC-17025 : 2005


Job No.: CTCE/BBMP/W.No.14/RN/BC/Sp_Wa/2016-17 18.08.2016

## Specific Gravity And Water Absorption Test

IS: 2386 Part III

| | |
|---|---|
| **Customer** | **Asst. Executive Engineer,** T. Dasarahalli Sub Division, BBMP, Bangalore. |
| **Agency** | **Mr. R. Nagaraj,** #4/13, Avalamma Choultry Layout, Magadi Road, Bangalore - 23. |
| **Name of the Work** | Improvements to cross roads at Munikondappa Layout link road Shivappa Garden to Dodda Maranna Layout in Bagalagunte Ward No.14, BBMP, Bangalore. |
| **Reference** | BBMP/DZ/AEE/TDSD/PR/ /2016-17 Dated:05.08.2016 |
| **Type of Mix** | Bituminous Concrete |
| **Date of Testing** | 18.08.2016 |

| Sl. No. | Details | Notation | Test Number | | | Mean Value |
|---|---|---|---|---|---|---|
| | | | Test 1 | Test 2 | Test 3 | |
| 1 | Weight of aggregate suspended in water with the basket | $W_1$ g | 1999 | 2000 | 2001 | |
| 2 | Weight of basket suspended in water | $W_2$ g | 755 | 755 | 755 | |
| 3 | Weight of saturated aggregate in water | $(W_1 - W_2) = W_s$ g | 1239 | 1238 | 1246 | |
| 4 | Weight of saturated surface dry aggregate in air | $W_3$ g | 2022 | 2023 | 2024 | |
| 5 | Weight of water equal to the volume of the aggregate | $(W_3 - W_S)$ g | 783 | 785 | 778 | |
| 6 | Weight of oven dried aggregate | $W_4$ g | 2006 | 2005 | 2010 | |
| 7 | Specific Gravity | $W_4/(W_3-W_S)$ | 2.562 | 2.554 | 2.584 | 2.567 |
| 8 | Apparent Specific gravity | $W_4/(W_4-W_S)$ | 2.615 | 2.614 | 2.631 | 2.620 |
| 9 | Water Absorption | $((W_3-W_4)*100)/W_4$ | 0.80% | 0.90% | 0.70% | 0.80% |

Comments:

→ Maximum allowable Aggregate Water absorption value for Bituminous Concrete is 2.0%

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JAS-ANZ BSCIC ISO 9001 REGISTERED

Job No: CTCE/BBMP/W.No.14/RN/BC/Bitumen/2016-17 18.08.2016

**BITUMEN CONTENT DETERMINATION OF BITUMINOUS CONCRETE MIX**

**As per IRC:SP:11-1984**

| | |
|---|---|
| CUSTOMER | **Asst. Executive Engineer,** T. Dasarahalli Sub Division, BBMP, Bangalore. |
| AGENCY | **Mr. R. Nagaraj,** #4/13, Avalamma Choultry Layout, Magadi Road, Bangalore - 23. |
| NAME OF THE WORK | Improvements to cross roads at Munikondappa Layout link road Shivappa Garden to Dodda Maranna Layout in Bagalagunte Ward No.14, BBMP, Bangalore. |
| REFERENCE | BBMP/DZ/AEE/TDSD/PR/ /2016-17 Dated:05.08.2016 |
| SAMPLE I/D | Roads in Munikondappa Layout |
| DATE OF TESTING | 18.08.2016 |

**BITUMEN CONTENT DETERMINATION**

| Description | Trail 1 | Trail 2 |
|---|---|---|
| 1. Weight of Mixture before Test, g | 500 | 500 |
| 2. Weight of Mixture after Test, g | 474 | 473 |
| 3. Weight of Asphalt and Mineral matter Extracted, g | - | - |
| 4. Weight of Mineral Matter, g. | - | - |
| 5. Weight of Ash, g | | |
| 6. Weight of Bitumen Extracted, g. (corrected) | 26 | 27.00 |
| 7. Bitumen content in % | 5.20 | 5.40 |
| 8. Average | **5.30** | |

**Note:**

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Þ The results indicated above are based on the tests carried out on the samples at site

Þ Any Query regarding the report must be reported within 30 days from the date of testing

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ಟಿ.ದಾಸರಹಳ್ಳಿ ಉಪ-ವಿಭಾಗ
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# CIVIL-TECH CONSULTANTS AND ENGINEERS

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Job No: CTCE/BBMP/W.No.14/RN/BC/Bitumen/2016-17 18.08.2016

**BITUMEN CONTENT AFTER GRADATION DETERMINATION OF BITUMINOUS CONCRETE MIX**
**As Per IS 2386 and IRC:SP:11-1984**

| | |
|---|---|
| CUSTOMER | **Asst. Executive Engineer,** T. Dasarahalli Sub Division, BBMP, Bangalore. |
| AGENCY | **Mr. R. Nagaraj,** #4/13, Avalamma Choultry Layout, Magadi Road, Bangalore - 23. |
| NAME OF THE WORK | Improvements to cross roads at Munikondappa Layout link road Shivappa Garden to Dodda Maranna Layout in Bagalagunte Ward No.14, BBMP, Bangalore. |
| REFERENCE | BBMP/DZ/AEE/TDSD/PR/ /2016-17 Dated:05.08.2016 |
| SAMPLE I/D | Roads in Munikondappa Layout |
| DATE OF TESTING | 18.08.2016 |

**GRADATION AFTER EXTRACTION**

| Sieve Size in mm | Trail 1 | | | | Specified Limits as per MORTH specification table 500-18 (Grading-2) |
|---|---|---|---|---|---|
| | Weight Retained, gm | % Retained | %Cummulative Retained | % Passing | |
| 19 | 0 | 0 | 0 | 100 | 100 |
| 13.2 | 45.32 | 9.56 | 9.56 | 90.44 | 79-100 |
| 9.5 | 32.21 | 6.80 | 16.36 | 83.64 | 70-88 |
| 4.75 | 69.69 | 14.70 | 31.06 | 68.94 | 53-71 |
| 2.36 | 68.12 | 14.37 | 45.43 | 54.57 | 42-58 |
| 1.18 | 51.23 | 10.81 | 56.24 | 43.76 | 34-48 |
| 0.6 | 52.31 | 11.04 | 67.27 | 32.73 | 26-38 |
| 0.3 | 46.31 | 9.77 | 77.04 | 22.96 | 18-28 |
| 0.15 | 41.22 | 8.70 | 85.74 | 14.26 | 12-20 |
| 0.075 | 40.22 | 8.49 | 94.23 | 5.77 | 4-10 |

| Sieve Size in mm | Trail 2 | | | | Specified Limits as per MORTH specification table 500-18 (Grading-2) |
|---|---|---|---|---|---|
| | Weight Retained, gm | % Retained | %Cummulative Retained | % Passing | |
| 19 | 0 | 0 | 0 | 100 | 100 |
| 13.2 | 35.62 | 7.53 | 7.53 | 92.47 | 79-100 |
| 9.5 | 46.36 | 9.80 | 17.33 | 82.67 | 70-88 |
| 4.75 | 65.31 | 13.81 | 31.14 | 68.86 | 53-71 |
| 2.36 | 71.22 | 15.06 | 46.20 | 53.80 | 42-58 |
| 1.18 | 74.32 | 15.71 | 61.91 | 38.09 | 34-48 |
| 0.6 | 43.31 | 9.16 | 71.07 | 28.93 | 26-38 |
| 0.3 | 33.12 | 7.00 | 78.07 | 21.93 | 18-28 |
| 0.15 | 31.25 | 6.61 | 84.67 | 15.33 | 12-20 |
| 0.075 | 38.21 | 8.08 | 92.75 | 7.25 | 4-10 |

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Job No.: CTCE/BBMP/W.No.14/RN/BC/Agg/2016-17

18.08.2016

## Aggregate Gradation Test

IS : 2386 Part I

| | |
|---|---|
| **Customer** | **Asst. Executive Engineer,** T. Dasarahalli Sub Division, BBMP, Bangalore. |
| **Agency** | **Mr. R. Nagaraj,** #4/13, Avalamma Choultry Layout, Magadi Road, Bangalore - 23. |
| **Name of theWork** | Improvements to cross roads at Munikondappa Layout link road Shivappa Garden to Dodda Maranna Layout in Bagalagunte Ward No.14, BBMP, Bangalore. |
| **Reference** | BBMP/DZ/AEE/TDSD/PR/ /2016-17 Dated:05.08.2016 |
| **Sample I / D** | Hot Mix Plant, Bangalore |
| **Type of Mix** | Bituminous Concrete |
| **Date of Testing** | 18.08.2016 |

Total Weight of Sample: **5200** gm

| SIEVE SIZE, mm | Weight Retained, gm | % Retained | Cummulative % Retained | % Passing | JOBMIX Gradation as per MORTH | Remarks |
|---|---|---|---|---|---|---|
| 19 | 0 | 0 | 0 | 100 | 100 | Gradation satisfies Bituminous concrete Grade-II specification as per MORTH |
| 13.2 | 735 | 14.13 | 14.13 | 85.87 | 79 - 100 | |
| 9.5 | 530 | 10.19 | 24.33 | 75.67 | 70 - 88 | |
| 4.75 | 620 | 11.92 | 36.25 | 63.75 | 53 - 71 | |
| 2.36 | 550 | 10.58 | 46.83 | 53.17 | 42 - 58 | |
| 1.18 | 525 | 10.10 | 56.92 | 43.08 | 34 - 48 | |
| 0.600 | 560 | 10.77 | 67.69 | 32.31 | 26 - 38 | |
| 0.300 | 585 | 11.25 | 78.94 | 21.06 | 18 - 28 | |
| 0.150 | 370 | 7.12 | 86.06 | 13.94 | 12 - 20 | |
| 0.075 | 325 | 6.25 | 92.31 | 7.69 | 4 - 10 | |

Total Weight of Sample: **5300** gm

| SIEVE SIZE, mm | Weight Retained, gm | % Retained | Cummulative % Retained | % Passing | JOBMIX Gradation as per MORTH | Remarks |
|---|---|---|---|---|---|---|
| 19 | 0 | 0 | 0 | 100 | 100 | Gradation satisfies Bituminous concrete Grade-II specification as per MORTH |
| 13.2 | 615 | 11.60 | 11.60 | 88.40 | 79 - 100 | |
| 9.5 | 525 | 9.91 | 21.51 | 78.49 | 70 - 88 | |
| 4.75 | 630 | 11.89 | 33.40 | 66.60 | 53 - 71 | |
| 2.36 | 580 | 10.94 | 44.34 | 55.66 | 42 - 58 | |
| 1.18 | 640 | 12.08 | 56.42 | 43.58 | 34 - 48 | |
| 0.600 | 525 | 9.91 | 66.32 | 33.68 | 26 - 38 | |
| 0.300 | 560 | 10.57 | 76.89 | 23.11 | 18 - 28 | |
| 0.150 | 385 | 7.26 | 84.15 | 15.85 | 12 - 20 | |
| 0.075 | 490 | 9.25 | 93.40 | 6.60 | 4 - 10 | |

**Note:**

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Job No.: CTCE/BBMP/W.No.14/RN/BC/Stability/2016-17 18.08.2016

## TEST REPORT ON STABILITY OF MIX

| | | |
|---|---|---|
| **Customer** | : | **Asst. Executive Engineer,** T. Dasarahalli Sub Division, BBMP, Bangalore. |
| **Agency** | : | **Mr. R. Nagaraj,** #4/13, Avalamma Choultry Layout, Magadi Road, Bangalore - 23. |
| **Name of Work** | : | Improvements to cross roads at Munikondappa Layout link road Shivappa Garden to Dodda Maranna Layout in Bagalagunte Ward No.14, BBMP, Bangalore. |
| **Reference** | : | BBMP/DZ/AEE/TDSD/PR/ /2016-17 Dated:05.08.2016 |
| **Source of location** | : | Hot mix Plant, Bangalore |
| **Type of Mix** | : | Bituminous Concrete |
| **Date of Testing** | : | 18.08.2016 |

The results of the tests conducted on the bituminous concrete mix sample are as follows:

| Sl. No | Description | Test Result 1 | Test Result 2 | Requirement as per MORTH (Table 500-19) |
|---|---|---|---|---|
| 1 | Marshal Stability, Kn | 9.05 | 9.10 | 9 Kn (min) |
| 2 | Marshal flow, mm | 2.85 | 3.10 | 2 – 4 |
| 3 | Percent air voids in Mineral Aggregate | 13.25 | 13.40 | 13 – 15 |
| 4 | Voids in Compacted Mix | 3.90 | 4.15 | 3 – 6 |
| 5 | Percent Voids filled with Bitumen | 68.45 | 69.65 | 65 - 75 |
| 6 | Density, g/cc | 2.26 | 2.27 | -- |

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